WHAT IS CLAIMED IS:

1. A development device comprising:

An electrostatic transportation device which moves fine particles by an electrostatic force, said electrostatic transportation device comprising,

a transporting base plate which has a plurality of electrodes which generate an electric field which performs transporting and hopping of fine particles by an electrostatic force,

wherein a width of each of the electrodes in a traveling direction of the fine particles is set to be in a range of 1 time to 20 times an average particle diameter of the fine particles, a pitch between the electrodes in the traveling direction of the fine particles is set to be in a range of 1 time to 20 times the average particle diameter of the fine particles, driving waveforms of n phases or more (n is an integer of 3 or more) are applied to respective electrodes, the transporting base plate has an inorganic or organic surface protective layer covering the electrodes, and the thickness of the surface protective layer does not exceed 10 μm; the surface protective layer comprises a single layer or a plurality of layers, at least the outermost layer of the surface protective layer provided on the transporting base plate is formed from a material positioned in the vicinity of a material used as a charge controlling agent of fine particles on a frictional charge sequence or a material positioned on a positive end side, and fine particles with a negatively charged polarity are moved.

2. The developmental device of claim 1, wherein the thickness of the electrodes does not exceed 3 μm.

3. A development device comprising:

an electrostatic transportation device which moves fine particles by an electrostatic force, the electrostatic transportation device comprising,

a transporting base plate which has a plurality of electrodes which generate an electric field which performs transporting and hopping of fine particles by an electrostatic force,

wherein a width of each of the electrodes in a traveling direction of the fine particles is set to be in a range of 1 time to 20 times an average particle diameter of the fine particles, a pitch between the electrodes in the traveling direction of the fine particles is set to be in a range of 1 time to 20 times the average particle diameter of the fine particles, driving waveforms of n phases or more (n is an integer of 3 or more) are applied to respective electrodes, the transporting base plate has an inorganic or organic surface protective layer covering the electrodes, and the thickness of the surface protective layer does not exceed 10 μm; the surface protective layer comprises a single layer or a plurality of layers, at least the outermost layer of the surface protective layer provided on the transporting base plate is formed from a material positioned in the vicinity of a material used as a charge controlling agent of fine particles on a frictional charge sequence or a material positioned on a negative end side, and fine particles with a positively charged polarity are moved.

4. A development device comprising:

an electrostatic transportation device which moves fine particles by an electrostatic force, the electrostatic device comprising,

a transporting base plate which has a plurality of electrodes which generate an electric field which performs transporting and hopping of fine particles by an electrostatic force,

wherein a width of each of the electrodes in a traveling direction of the fine particles is set to be in a range of 1 time to 20 times an average particle diameter of the fine particles, a pitch between the electrodes in the traveling direction of the fine particles is set to be in a range of 1 time to 20 times the average particle diameter of the fine particles, driving

waveforms of n phases or more (n is an integer of 3 or more) are applied to respective electrodes, the transporting base plate has an inorganic or organic surface protective layer covering the electrodes, and the thickness of the surface protective layer does not exceed 10 μm; and the outermost surface of the surface protective layer is coarsened.

5. A development device comprising:

an electrostatic transportation device which moves fine particles by an electrostatic force, the electrostatic transportation device comprising,

a transporting base plate which has a plurality of electrodes which generate an electric field which performs transporting and hopping of fine particles by an electrostatic force,

wherein a width of each of the electrodes in a traveling direction of the fine particles is set to be in a range of 1 time to 20 times an average particle diameter of the fine particles, a pitch between the electrodes in the traveling direction of the fine particles is set to be in a range of 1 time to 20 times the average particle diameter of the fine particles, driving waveforms of n phases or more (n is an integer of 3 or more) are applied to respective electrodes, and pulse-like driving waveforms of n phases (n is an integer of 3 or more) or more ~~is~~ are applied and a voltage application time per one phase is less than cycle period time x (n-1)/n.

6. The development device according to claim 5, wherein a base member serving as the transporting base plate is formed from a flexibly deformable material.

7. The development device according to claim 5, wherein the electrostatic transportation device further comprises a unit which vibrates the transporting base plate intermittently or continuously.

8. A development device comprising:

an electrostatic transportation device which moves fine particles by an electrostatic force, the electrostatic transportation device comprising,

a transporting base plate which has a plurality of electrodes which generate an electric field which performs transporting and hopping of fine particles by an electrostatic force,

wherein a width of each of the electrodes in a traveling direction of the fine particles is set to be in a range of 1 time to 20 times an average particle diameter of the fine particles, a pitch between the electrodes in the traveling direction of the fine particles is set to be in a range of 1 time to 20 times the average particle diameter of the fine particles, driving waveforms of n phases or more (n is an integer of 3 or more) are applied to respective electrodes, pulse-like driving waveforms of n phases (n is an integer of 3 or more) or more are applied, and a time period when a voltage which repels fine particles is applied to an electrode of a observed phase and a time period when a voltage which repels fine particles is applied to an upstream side electrode adjacent thereto and simultaneously a voltage which attracts fine particles is applied to a downstream side electrode adjacent thereto are set to 30 μsec or more.

9. A development device comprising:

an electrostatic transportation device which moves fine particles by an electrostatic force, the electrostatic transportation device comprising,

a transporting base plate which has a plurality of electrodes which generate an electric field which performs transporting and hopping of fine particles by an electrostatic force,

wherein a width of each of the electrodes in a traveling direction of the fine particles is set to be in a range of 1 time to 20 times an average particle diameter of the fine particles, a pitch between the electrodes in the traveling direction of the fine particles is set to be in a

range of 1 time to 20 times the average particle diameter of the fine particles, driving waveforms of n phases or more (n is an integer of 3 or more) are applied to respective electrodes, a driving voltage applied to the electrodes and a voltage of latent image section formed on a photosensitive body are set such that an electric field generated by the diving voltage and the voltage of the latent image section attracts the fine particles towards the photosensitive body, and the driving voltage and a voltage of a non-latent image section formed on the photosensitive body are set such that an electric field generated by the driving voltage and the voltage of the non-latent image section repels the fine particles from the photosensitive body.

10. The development device according to claim 9, wherein the transporting base plate has an inorganic or organic surface protective layer covering the electrodes, and the thickness of the surface protective layer does not exceed 10 μm.

11. The development device according to claim 9, wherein the transporting base plate is constituted by forming thin layer electrodes and a thin layer surface protective layer on a base member serving as a base sequentially in a stacking manner by an etching process, a deposition process or a combination of the etching process and the deposition process.

12. The development device according to claim 11, wherein the thin layer electrodes are formed by etching or patterning after formed by a vapor deposition process or an electro-deposition process, and the protective layer is formed by a sputtering, coating, or spray coating.

13. The development device according to claim 10, wherein the thickness of the electrodes does not exceed 3 μm.

14. The development device according to claim 9, wherein a base member serving as the transporting base plate is formed from a flexibly deformable material.

15. The development device according to claim 10, wherein the surface protective layer comprises a single layer or a plurality of layers, at least the outermost layer of the surface protective layer provided on the transporting base plate is formed from a material positioned in the vicinity of a material used as a charge controlling agent of fine particles on a frictional charge sequence or a material positioned on a positive end side, and fine particles with a negatively charged polarity is moved.

16. The development device according to claim 10, wherein the surface protective layer comprises a single layer or a plurality of layers, at least the outermost layer of the surface protective layer provided on the transporting base plate is formed from a material positioned in the vicinity of a material used as a charge controlling agent of fine particles on a frictional charge sequence or a material positioned on a negative end side, and fine particles with a positively charged polarity is moved.

17. The development device according to claim 10, wherein the outermost surface of the surface protective layer is coarsened.

18. The development device according to claim 9, wherein pulse-like driving waveforms of n phases (n is an integer of 3 or more) or more is applied and a voltage application time per one phase is less than cycle period time x (n-1)/n.

19. The development device according to claim 9, wherein pulse-like driving waveforms of n phases (n is an integer of 3 or more) or more is applied, and a time period when a voltage which repels fine particles is applied to an electrode of a observed phase and a time period when a voltage which repels fine particles is applied to an upstream side electrode adjacent thereto and simultaneously a voltage which attracts fine particles is applied to a downstream side electrode adjacent thereto are set to 30 μsec or more.

20. The development device according to claim 9, further comprising a unit which vibrates the transporting base plate intermittently or continuously.

21. The development device according to claim 9, wherein a vertical field intensity at a height position corresponding to the average diameter of each fine particle on the surface in the vicinity of the electrode center of the surface of the transporting base plate which performs hopping of the fine particles by an electrostatic force is 1×10^6 V/m or more.

22. The development device according to claim 9, wherein the charge potential of the surface of the latent image carrier surface is |300| V or less.

23. The development device according to claim 9, wherein a spacing between the latent image carrier and the surface of the transporting base plate which performs hopping of the fine particles by an electrostatic force is in a range of 2 to 10 times a hopping height of the fine particles.

24. The development device according to claim 9, wherein a spacing between the latent image carrier and the surface of the transporting base plate which performs hopping of the fine particles by an electrostatic force is in a range of 1/2 to 2 times a hopping height of the fine particles.

25. The development device according to claim 9, wherein driving waveforms where a driving frequency of each phase is in a range of 1 KHz to 15 KHz are applied to the electrodes of the transporting base plate which performs hopping of the fine particles by an electrostatic force.

26. An image formation apparatus comprising:

an electrostatic transportation device which moves fine particles by an electrostatic force, the electrostatic transportation device comprising,

a transporting base plate which has a plurality of electrodes which generate an electric field which performs transporting and hopping of fine particles by an electrostatic force,

wherein a width of each of the electrodes in a traveling direction of the fine particles is set to be in a range of 1 time to 20 times an average particle diameter of the fine particles, a pitch between the electrodes in the traveling direction of the fine particles is set to be in a range of 1 time to 20 times the average particle diameter of the fine particles, driving waveforms of n phases or more (n is an integer of 3 or more) are applied to respective electrodes, a driving voltage applied to the electrodes and a voltage of latent image section formed on a photosensitive body are set such that an electric field generated by the diving voltage and the voltage of the latent image section attracts the fine particles towards the photosensitive body, and the driving voltage and a voltage of a non-latent image section formed on the photosensitive body are set such that an electric field generated by the driving voltage and the voltage of the non-latent image section repels the fine particles from the photosensitive body.

27. The image forming apparatus according to claim 26, wherein the transporting base plate has an inorganic or organic surface protective layer covering the electrodes, and the thickness of the surface protective layer does not exceed 10 μm.

28. The image forming apparatus according to claim 26, wherein the transporting base plate is constituted by forming thin layer electrodes and a thin layer surface protective layer on a base member serving as a base sequentially in a stacking manner by an etching process, a deposition process or a combination of the etching process and the deposition process.

29. The image forming apparatus according to claim 28, wherein the thin layer electrodes are formed by etching or patterning after formed by a vapor deposition process or an electro-deposition process, and the protective layer is formed by a sputtering, coating, or spray coating.

30. The image forming apparatus according to claim 27, wherein the thickness of the electrodes does not exceed 3 μm.

31. The image forming apparatus according to claim26, wherein a base member serving as the transporting base plate is formed from a flexibly deformable material.

32. The image forming apparatus according to claim 27, wherein the surface protective layer comprises a single layer or a plurality of layers, at least the outermost layer of the surface protective layer provided on the transporting base plate is formed from a material positioned in the vicinity of a material used as a charge controlling agent of fine particles on a frictional charge sequence or a material positioned on a positive end side, and fine particles with a negatively charged polarity is moved.

33. The image forming apparatus according to claim 27, wherein the surface protective layer comprises a single layer or a plurality of layers, at least the outermost layer of the surface protective layer provided on the transporting base plate is formed from a material positioned in the vicinity of a material used as a charge controlling agent of fine particles on a frictional charge sequence or a material positioned on a negative end side, and fine particles with a positively charged polarity is moved.

34. The image forming apparatus according to claim 27, wherein the outermost surface of the surface protective layer is coarsened.

35. The image forming apparatus according to claim 26, wherein pulse-like driving waveforms of n phases (n is an integer of 3 or more) or more is applied and a voltage application time per one phase is less than cycle period time x (n-1)/n.

36. The image forming apparatus according to claim 26, wherein pulse-like driving waveforms of n phases (n is an integer of 3 or more) or more is applied, and a time period when a voltage which repels fine particles is applied to an electrode of a observed phase and a time period when a voltage which repels fine particles is applied to an upstream

side electrode adjacent thereto and simultaneously a voltage which attracts fine particles is applied to a downstream side electrode adjacent thereto are set to 30 μsec or more.

37. The image forming apparatus according to claim 26, further comprising a unit which vibrates the transporting base plate intermittently or continuously.

38. The image forming apparatus according to claim 26, wherein a vertical field intensity at a height position corresponding to the average diameter of each fine particle on the surface in the vicinity of the electrode center of the surface of the transporting base plate which performs hopping of the fine particles by an electrostatic force is 1×10^6 V/m or more.

39. The image forming apparatus according to claim 26, wherein the charge potential of the surface of the latent image carrier surface is |300| V or less.

40. The image forming apparatus according to claim 26, wherein a spacing between the latent image carrier and the surface of the transporting base plate which performs hopping of the fine particles by an electrostatic force is in a range of 2 to 10 times a hopping height of the fine particles.

41. The image forming apparatus according to claim 26, wherein a spacing between the latent image carrier and the surface of the transporting base plate which performs hopping of the fine particles by an electrostatic force is in a range of 1/2 to 2 times a hopping height of the fine particles.

42. The image forming apparatus according to claim 26, wherein driving waveforms where a driving frequency of each phase is in a range of 1 KHz to 15 KHz are applied to the electrodes of the transporting base plate which performs hopping of the fine particles by an electrostatic force.